

In re Appln of Igor Lubomirsky  
Appln. No. 10/560,107  
Amendment dated May 4, 2010  
Reply to Final Action mailed January 5, 2010

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(Previously Presented)** A pyroelectric compound, comprising:  
a metal, a mixture of metals, or a semi conducting compound lacking spatial periodicity;  
said pyroelectric compound being an inorganic, quasi-amorphous oxide compound having piezoelectric properties;  
said pyroelectric compound being a product of application of a mechanical strain to a substantially amorphous compound, said mechanical strain being controlled so as to prevent crystallization of said compound.
2. **(Withdrawn)** The compound of claim 1 having the formula  $(AxB1-x)pOn$ , wherein A and B are independently selected from transitions metals, elements of Group IVA of the periodic table, alkali metals, alkali earth metals and rare earth metals; x has values of between 0 to 1; p is an integer having the values 1, 2 or 3; and n is an integer having the value of 1, 2, 3 or 4.

3. **(Withdrawn)** The compound of claim 2, wherein A is a transition metal or an element of Group IVA of the periodic table, x is 1 and p is 2.

4. **(Original)** The compound of claim 1, having the formula  $(A_xB_{1-x})(C_yD_{1-y})O_n$  wherein A and B are independently selected from alkali metals, alkali earth metals, rare earth metals and elements of Group IVA of the periodic table; C and D are independently selected from transition metals and alkali earth metals; x and y have values of between 0 to 1; and n is an integer having the value of 1, 2 or 3.

5. **(Original)** The compound of claim 4, wherein A and B are independently selected from Ba, Sr, Ca, Pb, La, Eu, Li, Na, K and Cs ; C and D are independently selected from Ti, Zr, Nb, Ta, Sc, Mg and V; and n is 3.

6. **(Original)** The compound of claim 5, wherein A and B are independently selected from Ba, Sr, Ca, Pb, La and Eu.

7. **(Original)** The compound of claim 5, wherein A and B are independently selected from Li, Na, K and Cs.

8. (Original) The compound of claim 5, wherein C and D are independently selected from Ti and Zr.

9. (Original) The compound of claim 6, wherein C and D are independently selected from Ti and Zr.

10. (Original) The compound of claim 7, wherein C and D are independently selected from Ti and Zr.

11. (Original) The compound of claim 5, wherein C and D are independently selected from Nb, Ta, Sc, Mg and V.

12. (Original) The compound of claim 6, wherein C and D are independently selected from Nb, Ta and V.

13. (Original) The compound of claim 7, wherein C and D are independently selected from Nb, Ta and V.

14. (Original) Inorganic, quasi-amorphous compound of claim 4, wherein y=0 and having the formula  $(A_xB_{1-x})DO_3$ , wherein A, B, D and x are as defined in claim 4.

15. **(Original)** The compound of claim 4 having a pyroelectric coefficient of between about  $10^{-12}$  C/(cm<sup>2</sup> x K) and about  $10^{-7}$  C/(cm<sup>2</sup> x K).

16. **(Original)** The compound of claim 14 having a pyroelectric coefficient of between about  $10^{-12}$  C/(cm<sup>2</sup> x K) and about  $10^{-7}$  C/(cm<sup>2</sup> x K).

17. **(Original)** The compound of claim 4 selected from BaTiO<sub>3</sub>, CaTiO<sub>3</sub>, PbTiO<sub>3</sub>, Pb(ZrTi)O<sub>3</sub>, Pb(Zr<sub>0.35</sub>Ti<sub>0.65</sub>)O<sub>3</sub>, (PbCa)TiO<sub>3</sub>, (PbLa)(ZrTi)O<sub>3</sub>, PbLaTiO<sub>3</sub>, Pb(ScTa)O<sub>3</sub>, Pb(ScNb)O<sub>3</sub>, Pb(MgNb)O<sub>3</sub>, SrTiO<sub>3</sub>, (Sr<sub>0.65</sub>,Ba<sub>0.35</sub>)TiO<sub>3</sub>, (Ba<sub>0.70</sub>,Sr<sub>0.30</sub>)TiO<sub>3</sub> and EuTiO<sub>3</sub>.

18. **(Original)** The compound of claim 17 having a pyroelectric coefficient of between about  $10^{-12}$  C/(cm<sup>2</sup> x K) and about  $10^{-7}$  C/(cm<sup>2</sup> x K).

19. **(Original)** The compound of claim 17 being selected from BaTiO<sub>3</sub>, PbTiO<sub>3</sub> and SrTiO<sub>3</sub>.

20. **(Original)** The compound of claim 18 being BaTiO<sub>3</sub>.

Claims 21-23. (**Cancelled**)

24. (**Currently Amended**) Inorganic quasi-amorphous compound of the formula  $(AxB1-x)(CyD1-y)O_3$ , wherein A and B are independently selected from alkali metals, alkali earth metals, rare earth metals and elements of Group IVA of the periodic table; C and D are independently selected from transition metals and alkali earth metals; x and y have values of between 0 to 1; lacking spatial periodicity; and wherein said compound is a product of applying a mechanical strain to a substantially amorphous compound of the formula  $(AxB1-x)(CyD1-y)O_n$  wherein n is an integer having the value of 1, 2 or 3, said mechanical strain being controlled so as to prevent crystallization of said compound, thereby obtaining inorganic quasi-amorphous compound having pyroelectric properties. [[.]]

25. (**Original**) A device comprising the compound according to claim 1 in the form of a film coating on a substrate.

26. **(Original)** A device comprising the compound according to claim 4 in the form of a film coating on a substrate.

27. **(Original)** The device of claim 26, wherein the substrate is selected from Si, SiO<sub>2</sub> and glass.

28. **(Original)** The device of claim 27, wherein the thickness of the coating layer is below 0.5 micron.

29. **(Previously Presented)** A device comprising the compound of claim 1, the device being operable as a sensor for sensing an external field including at least one of the following: temperature field, magnetic field and electric field.

30. **(Previously Presented)** A device comprising the compound of claim 4, the device being operable as a sensor for sensing an external field including at least one of the following: temperature field, magnetic field and electric field.

31. **(Original)** A device having an acoustic wave propagation element including the compound of claim 1.

32. **(Original)** A device having an acoustic wave propagation element including the compound of claim 4.

33. **(Original)** A device having an acoustic wave propagation element including the compound of claim 5.

34. **(Original)** A birefringent medium comprising the compound of claim 1.

35. **(Original)** A birefringent medium comprising the compound of claim 4.

Claim 36 **(Cancelled)**.

Claim 37 **(Cancelled)**.

38. **(Withdrawn)** A device comprising a compound according to claim 3 in the form of a film coating on a substrate.

39. **(Withdrawn)** The device of claim 38, wherein the substrate is selected from Si, SiO<sub>2</sub> and glass.

40. (**Withdrawn**) The device of claim 39, wherein the compound is SiO<sub>2</sub>.

41. (**Previously Presented**) The pyroelectric compound of claim 1, which is a non-crystalline ionic solid having macroscopic polarization.